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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/064,154	06/14/2002	Ronald G. Fink	6556.4814	5102
39670	7590	04/20/2004	EXAMINER	
BOC, INC. 575 MOUNTAIN AVE MURRAY HILLS, NJ 07974-2064			VERSTEEG, STEVEN H	
			ART UNIT	PAPER NUMBER
			1753	

DATE MAILED: 04/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/064,154	Applicant(s) FINK ET AL.	
	Examiner Steven H VerSteeg	Art Unit 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☒ Claim(s) 19-21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 June 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/21/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to because Figure 1 has label **26** pointing to two separate items. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: **52** (see Figure 11). A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

3. The disclosure is objected to because of the following informalities: “in”, second occurrence, needs delete in line 2 of [0010]; “side” should be “end” at [0030]; “us” should be “is” at [0037]; and “Figure 10a” should be “Figure 10” at [0053], line 8.

Appropriate correction is required.

### ***Claim Objections***

4. Claims 1-21 are objected to because of the following informalities: the acronym “VOCs” needs to be expanded in claims 1 and 14; claims 1 and 14 utilize improper Markush terminology

“at least one selected from the group of” rather than the proper Markush terminology “at least one selected from the group consisting of”; the period before “the” in line 3 of claim 6 needs deleted; “comprising a target” in line 2 of claim 19 needs deleted; “the”, second occurrence needs deleted in line 4 of claim 19; and “target” needs deleted in line 4 of claim 21. Claims 2-13 depend from claim 1 and contain all of the limitations of claim 1. Therefore, claims 2-13 are objected to for the same reasons as claim 1. Claim 7 depends from claim 6 and contains all of the limitations of claim 6. Therefore, claim 7 is objected to for the same reasons as claim 6. Claims 15-18 depend from claim 14 and contain all of the limitations of claim 14. Therefore, claims 15-18 are objected to for the same reasons as claim 14. Claims 20 and 21 depend from claim 19 and contain all of the limitations of claim 19. Therefore, claims 20 and 21 are objected to for the same reasons as claim 19. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 2, 6, and 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claim 2 is out of scope with claim 1. Claim 1 requires at least one of titanium dioxide, copper, and silver, yet claim 2 allows for the situation of 0% titanium dioxide, 0% silver, and 0% copper. Thus, claim 2 is out of scope with claim 1.

8. Claim 6 recites the limitation "the wire mesh" in line 2. There is insufficient antecedent basis for this limitation in the claim.

9. Claim 7 depends from claim 6 and contains all of the limitations of claim 6. Therefore, claim 7 is rejected for the same reasons as claim 6.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1, 4, 6, 8-10, and 14-16 are rejected under 35 U.S.C. 102(e) as being anticipated by US 2003/0019738 A1 to Reisfeld et al. (Reisfeld).

12. For claim 1, Applicant requires a high volume, wall-mountable air sanitation apparatus for disinfecting and removing VOCs from air with high energy UV light and ozone, comprising: a casing with an interior, a first side and a second side; a means for moving air located at the first side of the casing, the air moving across at least one elongated target comprising a target compound, said target compound comprising at least one selected from the group consisting of titanium dioxide, copper and silver, and an elongated high energy UV light source adapted to direct UV light toward the air and the target whereby the UV striking the air and the target in the presence of water will generate at least one selected from the group of hydro-peroxides, super-oxide ions and hydroxyl radicals.

13. Reisfeld discloses a photocatalytic air purifier (abstract) that is suitable for residential applications and can be installed in original equipment of retrofitted [0008] and can be wall-mounted (Figure 6). The apparatus comprises a casing (Figure 1), means for moving air **100**, a target compound containing titanium dioxide [0025], and an elongated UV light source **20**.

14. For claim 4, Applicant requires the target to comprise mesh and be located between the UV light source and the air. In Figure 1, the target is between the UV light source and the air. The target is a mesh [0025].

15. For claim 6, Applicant requires a secondary element a predetermined distance from the wire mesh. Figure 1 shows there to be several mesh filters.

16. For claim 8, Applicant requires the means for moving the air to comprise a fan. Reisfeld uses a fan **100**.

17. For claim 10, Applicant requires the light reflected by the UV light to be visible from the exterior of the casing through the blades of the fan. Figure 1 shows that the orientation of the items allows for the UV light to be visible through the vent.

18. For claim 9, Applicant requires a particulate filter for removing particulates from the air. Reisfeld discloses the limitation by using a combed filter element **14**.

19. For claim 14, Applicant requires an apparatus for efficiently disinfecting and removing VOCs from air with high energy UV light, comprising a high energy UV light source capable of generating ozone from oxygen in air; a mesh target located at least partway between the high energy UV light source and the air, the target including a target compound comprising at least one selected from the group consisting of titanium dioxide, copper and silver, whereby the UV light and the target compound generate in the presence of water at least one selected from the

group of hydro-peroxides, super-oxide ions and hydroxyl radicals, and a secondary target element located a predetermined distance from the mesh target, the secondary target element including the target compound, whereby at least a portion of the UV light that passes through the mesh target strikes the secondary target element, thereby generating additional hydro-peroxides, super-oxide ions and hydroxyl radicals to that generated by the mesh target.

20. Reisfeld discloses an apparatus comprising a UV light source **20**, mesh target [0025] of titanium dioxide, and a secondary target **12'**.

21. For claim 15, Applicant requires the air to flow generally in the volume between the mesh targets. Figure 1 shows that the air will flow between the targets.

22. For claim 16, Applicant requires the secondary target to act as a conduit for the moved air. There is no reason to believe that the target in Reisfeld will not act in the same manner as that claimed by Applicant.

### *Claim Rejections - 35 USC § 103*

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. Claims 3 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0019738 A1 to Reisfeld et al. (Reisfeld) in view of US 6,589,489 B2 to Morrow et al. (Morrow).

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25. For claims 3 and 17, Applicant requires the target to comprise silica gel. Reisfeld is described above, but does not disclose the target to comprise silica gel. Reisfeld discloses that any suitable material may be used as the substrate for the titanium dioxide.

26. Morrow discloses that the dielectric body of the porous dielectric material onto which titanium dioxide is attached in a photocatalytic air purification system can be silica gel (col. 4, l. 28-53).

27. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Reisfeld to utilize silica gel as the substrate in the photocatalytic reactor because silica gel is a well known and suitable substrate for such an apparatus.

28. Claims 5, 11-13, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0019738 A1 to Reisfeld et al. (Reisfeld) in view of US 5,656,242 to Morrow et al. (Morrow II).

29. For claim 5, Applicant requires the UV light source to emit 185-254 nm. Reisfeld does not disclose the specifics of the UV source.

30. Morrow II discloses that air purifier lamps should be 184-254 nm in wavelength because it is the standard emission spectra for mercury lamps and provides the safest atmosphere for humans in the presence of oxygen.

31. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Reisfeld to utilize a mercury lamp for the UV lamp because it is the standard emission that provides a safe atmosphere for humans.



32. For claims 11 and 18, Applicant requires the UV light source to be one or more low-pressure mercury UV lights. As noted above, the mercury UV light is obvious.

33. For claim 12, Applicant requires at least one mesh target surrounding the UV light. For claim 13, Applicant requires a mesh target to be affected by more than one UV light source.

Reisfeld discloses several targets surrounding the UV light source (Figure 1) and several light sources affecting a single mesh target (Figure 1).

#### *Allowable Subject Matter*

34. Claims 2 and 7 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

35. Claims 19-21 would be allowable if written to overcome the claim objection presented above.

36. The following is a statement of reasons for the indication of allowable subject matter: it is neither anticipated nor obvious over the prior art of record to have a high volume, wall-mountable air sanitation apparatus for disinfecting and removing VOCs from air with high energy UV light and ozone as claimed by Applicant in claims 2 and 7.

37. Reisfeld discloses titanium dioxide to be present, but does not disclose the specific amount of the titanium dioxide. Certainly there is more than 0, but there is no indication that there is less than 30%. It would require hindsight to require 30% titanium dioxide or less.

38. It is also neither anticipated nor obvious over the prior art of record to have a wall mountable method for treating a large volume of air as claimed by Applicant in claim 19.

39. Reisfeld discloses titanium dioxide to be present in the target compound, but there is no indication that titanium dioxide, silver, and copper are all present as currently claimed by Applicant. Modifying Reisfeld to require copper and silver in addition to the already present titanium dioxide would require hindsight.

### ***General Information***

For general status inquiries on applications not having received a first action on the merits, please contact the Technology Center 1700 receptionist at (571) 272-1700.

For inquiries involving Recovery of lost papers & cases, sending out missing papers, resetting shortened statutory periods, or for restarting the shortened statutory period for response, please contact Palestine Jenkins at (571) 272-1021.

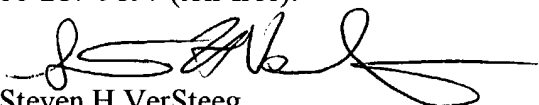
For general inquiries such as fees, hours of operation, and employee location, please contact the Technology Center 1700 receptionist at (571) 272-1300.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H VerSteeg whose telephone number is (571) 272-1348. The examiner can normally be reached on Mon - Thurs (6:30 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Steven H VerSteeg  
Primary Examiner  
Art Unit 1753

shv  
April 15, 2004